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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEUNG, WAI LUN

ART UNIT

PAPER NUMBER

2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/08/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/784,869	<b>Applicant(s)</b> UEYANAGI ET AL.	
	<b>Examiner</b> Danny Wai Lun Leung	<b>Art Unit</b> 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20040224</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10-13, 43 44, 46 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "a small number of cells" in claims 10-11, 43 and 44 is a relative term which renders the claim indefinite. The term "a small number of cells" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

5. The term "wide" in claims 46 and 47 is a relative term which renders the claim indefinite. The term "wide" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6, 14-16, 23-25, and 32-35 are rejected under 35 U.S.C. 102(e) as being anticipated by **Andreu-von Euw et al.** (*US007120363B2*), *hereafter refer to as Euw*.

Regarding to claims 1-3, **Euw** discloses a wireless optical system (*fig 10*) which comprises a transmitting section (*552, fig 10*) having a light-emitting element (*560, fig 10*) and a transmission light condenser lens (*566, fig 10*), and a receiving section (*554, fig 10*) having a light-detecting element (*562, fig 10*) and a received light condenser lens (*566, fig 10*), and which communicates with a counterpart device (*fig 10*), the wireless optical system further comprising: scanning means which scans said light-emitting element relative to said transmission light condenser lens, and scans said light-detecting element relative to said received light condenser lens (*fig 9; col 5, ln 40- col 6, ln 53*); and control means (*582, fig 10*) which controls a transmission direction of transmission light transmitted from said light-emitting element by driving said scanning means, and controls a reception direction of received light received by said light-detecting element by driving said scanning means (*col 8, ln 9-43*).

As to claims 32-33, **Euw** further teaches wherein said control means also controls a directional angle of the transmission light by means of driving said scanning means (*col 6, ln 38-53*).

As to claims 34-35, **Euw** further teaches wherein said control means also controls a directional angle of the received light by means of driving said scanning means (*col 6, ln 38-53*).

As to claims 4-6, **Euw** further teaches said scanning means two-dimensionally scans said light-emitting element and two-dimensionally scans said light-detecting element (*col 8, ln 32-35*).

As to claims 14-16, **Euw** further teaches wherein said light-detecting element is disposed in vicinity of a focal point of said received light condenser lens, and is configured from a single light detecting element which is equal in size to a diameter of a light-condensed spot formed by said received light condenser lens (*col 9, ln 41-48*).

As to claims 23-25, **Euw** further teaches wherein said scanning means periodically wobbles a position of said single light detecting element (*col 6, ln 54-62*); and said control means generates a positional error signal pertaining to a transmission direction of a counterpart device by means of detecting the received light in synchronization with a wobbling cycle of said single light detecting element (*col 6, ln 63-col 7, ln 18*), and optimizes transmission and reception directions based on the positional error signal (*col 7, ln 19-40*).

8. Claims 26, 30, 31, and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by **Goodwill** (*US006775480B1*).

Regarding claims 26 and 45, **Goodwill** discloses an optical wireless system which communicates between a master device and a slave device, wherein said master device and said slave device respectively comprise a transmitting section having a light-emitting element and a transmission light condenser lens, and a receiving section having a light-detecting element and a received-light condenser lens (*col 12, ln 10-63; fig 7*), and at least one of said master device and

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said slave device comprises: scanning means which two-dimensionally scans said light-emitting element relative to said transmission light condenser lens, and two-dimensionally scans said light-detecting element relative to said received light condenser lens (*col 3, ln 50-63*); measuring means which measures a transmission direction of the transmission light transmitted from said master device or said slave device on the other end (*col 10, ln 41-61*); and control means which drives said scanning means to control a transmission direction of the transmission light transmitted from said light-emitting element and a reception direction of the received light received by said light-detecting element based on measurement result of said measuring means (*col 10, ln 50-61*).

As to claim 30, **Goodwill** further teaches wherein at least one of said master device and said slave device detects a direction of the transmission light emitted from said master device or said slave device on the other end, and communicates by transmitting the transmission light in the direction of the transmission light (*fig 7; col 11, ln 41-col 12, ln 63*).

As to claim 31, **Goodwill** further teaches wherein said slave device two-dimensionally scans said light-emitting element, and said master device measures a direction of the transmission light and communicates by transmitting the transmission light in the direction (*col 11, ln 25-40*).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 7-9, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Andreu-von Euw et al.** (*US007120363B2*) hereafter refer to as **Euw**, in view of **Graves et al.** (*US006721510B2*).

Regarding claims 7-9, and 36-38, **Euw** discloses the optical system in accordance to claims 1-6 as discussed in 102 rejection as stated above. **Euw** does not disclose expressly wherein one common condenser lens is used as both said transmission light condenser lens and said received light condenser lens, and said light-emitting element and said light-detecting element are disposed such that the transmission light transmitted from said light-emitting element and the received light received by said light-detecting element are transmitted and received through said common condenser lens.

**Graves**, from the same field of endeavor, teaches wherein one common condenser lens is used as both a transmission light condenser lens and a received light condenser lens, and said light-emitting element and said light-detecting element are disposed such that the transmission light transmitted from said light-emitting element and the received light received by said light-

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detecting element are transmitted and received through said common condenser lens (*col 4, ln 8-16; fig 4*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use one common condenser lens as both said transmission light condenser lens and a received light condenser lens onto **Euw**'s system as suggested by **Graves**. The motivation for doing so would have been to save space and cost (*Graves, col 4, ln 13*).

12. Claims 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Andreu-von Euw et al.** (*US007120363B2*) hereafter refer to as **Euw**, in view of **Javitt et al.** (*US006381055B1*).

Regarding claims 39-42, **Euw** discloses the system in accordance to claims 1-3 as discussed in 102 rejection as stated above. **Euw** further teaches wherein said light-emitting element and light-detecting element are disposed in vicinity of a position of a focal point of said transmission light condenser lens (*col 9, ln 41-54*). **Euw** does not disclose expressly said scanning means supports said light-emitting element and light-detecting element in a three-dimensionally movable manner, and said control means controls a transmission direction and a directional angle of the transmission light, by means of driving said scanning means to three-dimensionally move said light-emitting element and light-detecting element. **Javitt**, from the same field of endeavor, teaches a scanning means supports a light-emitting element/ light-detecting element in a three-dimensionally movable manner, and a control means to control a transmission direction and a directional angle of the transmission light, by means of driving said scanning means to three-dimensionally move said light-emitting element/ light-detecting element (*col 10, ln 43-60*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to control **Euw**'s light-emitting element and light-detecting element in a

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three-dimensionally movable manner as suggested by **Javitt**, and having a control means such as that of **Javitt's** to control a transmission direction and a directional angle of the transmission light, by means of driving said scanning means to three-dimensionally move said light-emitting element and light-detecting element. The motivation for doing so would have been to provide a more accurate alignment.

13. Claims 10, 11, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Andreu-von Euw et al. (US007120363B2)** hereafter refer to as **Euw**, in view of **Goodwill (US006775480B1)**.

Regarding claims 10, 11, 43, and 44, **Euw** discloses the optical system in accordance to claims 2, 3, 5, and 6 as discussed in 102 rejection as stated above. **Euw** does not disclose expressly wherein said light-detecting element includes a plurality of light-detecting cells arranged in a two-dimensional array, and said control means drives said scanning means to limit said light-detecting cells to one or a small number of cells which receive light among the plurality of light-detecting cells. **Goodwill**, from the same field of endeavor, teaches wherein said light-detecting element includes a plurality of light-detecting cells arranged in a two-dimensional array, and said control means drives said scanning means to limit said light-detecting cells to one or a small number of cells which receive light among the plurality of light-detecting cells (*col 3, ln 51-63*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to arrange a plurality of light-detecting cells in a two-dimensional array onto **Euw's** system as suggested by **Goodwill**. The motivation for doing so

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would have been to be able to sufficiently accommodate the number of data channels being transmitted (*Goodwill*, col 4, ln 47-56).

As to claim 12, **Euw** further teaches wherein the plurality of light-detecting cells are configured from a plurality of CCDs or MOS elements (col 7, ln 46-48).

As to claim 13, **Euw** further teaches wherein the plurality of light-detecting cells are configured from a plurality of photodiodes or avalanche photodiodes (col 7, ln 46-48).

Claims 17-19 are rejected for the same reasons as stated above regarding claims 10, 11, 43, and 44, because in addition to the limitations as stated above, **Euw further** teaches wherein said light-detecting element is disposed in vicinity of a focal point of said received light condenser lens, and is constituted from light detecting elements which are equal in size to a diameter of a light-condensed spot formed by said received light condenser lens (col 9, ln 41-54). It would have been obvious to combine **Euw** and **Goodwill** for the same reason as stated regarding claims 10, 11, 43, and 44, such that said light-detecting element is constituted from a pair of light detecting elements as suggested by **Goodwill**.

14. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Andreu-von Euw et al.** (US007120363B2) hereafter refer to as **Euw**, in view of **Mun** (US005663944A ).

Regarding claims 20-22, **Euw** discloses the optical system in accordance to claims 1-6 as discussed in 102 rejection as stated above. **Euw** does not disclose expressly wherein said light-emitting element is formed to be stacked on said light-detecting element. **Mun**, from the same field of endeavor, teaches a light-emitting element is formed to be stacked on a light-detecting element (fig 4; col 3, ln 24-50). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to form a light-emitting element stacked on a light-

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detecting element onto **Euw**'s system as suggested by **Mun**. The motivation for doing so would have been to reduce space and cost.

15. Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goodwill** (*US006775480B1*), in view of **Andreu-von Euw et al.** (*US007120363B2*) hereafter refer to as **Euw**.

Regarding claims 46 and 47, **Goodwill** teaches the optical wireless system which communicates between a master device and a slave device as discussed above regarding claim 45, **Goodwill** does not disclose expressly wherein said transmitting section of at least one of said master device and said slave device transmits transmission light having a wide directional angle, and said receiving section of a remaining device receives the transmission light having a wide directional angle, and starts a communication with said transmitting section, and wherein, subsequently, said transmitting section or said receiving section performs the communication by means of narrowing a directional angle of the transmission light or the received light. **Euw**, from the same field of endeavor, teaches an optical wireless system wherein a transmitting section of a transmission device transmits transmission light having a wide directional angle (*col 6, ln 38-44*), and said receiving section of a remaining device receives the transmission light having a wide directional angle, and starts a communication with said transmitting section, and wherein, subsequently, said transmitting section or said receiving section performs the communication by means of narrowing a directional angle of the transmission light or the received light (*col 6, ln 43-53*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to utilize a wide directional angle and a narrow directional angle onto **Goodwill**'s system based on different circumstances as suggested by **Euw**. The motivation for doing so

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would have been to appropriately allocate power consumption while maintaining alignment accuracy.

16. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goodwill** (*US006775480B1*), in view of **Javitt et al.** (*US006381055B1*).

Regarding claim 27, **Goodwill** discloses the system in accordance to claim 26 as discussed above. **Goodwill** does not disclose expressly wherein said light-emitting elements of said master device and said slave device emit the transmission light at different wavelengths. **Javitt**, from the same field of endeavor, teaches a wireless optical system having light-emitting elements of said master device and said slave device emit the transmission light at different wavelengths (*col 8, ln 11-29*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use different wavelengths for emitting elements for the master device and slave device onto **Goodwill**'s system as suggested by **Javitt**. The motivation for doing so would have been to avoid interference.

As to claims 28 and 29, **Javitt** further teaches wherein the wavelength of the beam is preferably between 0.7  $\mu\text{m}$  and 1.5  $\mu\text{m}$ . Therefore, absent any teaching of criticality, it would have been an engineering design choice to implement a shorter wavelength for the slave device than that of the transmission light emitted from said light-emitting element of said master device; or wherein said light-emitting element of said master device emits the transmission light having a wavelength of 1.4 to 1.6  $\mu\text{m}$ , and said light-emitting element of said slave device emits the transmission light having a wavelength of 0.8 to 1  $\mu\text{m}$ . The motivation would have been to optimize transmission quality using different design choice criteria. Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the

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optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Wai Lun Leung whose telephone number is (571) 272-5504. The examiner can normally be reached on 9:30am-9:00pm Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DWL  
February 28, 2007

  
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